DOCUMENT RESUME

ED 471 983 TM 034 705

AUTHOR	Ikegulu, T. Nelson
TITLE	Framework for Evaluating Educational Systemic Initiatives.
PUB DATE	1999-11-05
NOTE	26p.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	EDRS Price MF01/PC02 Plus Postage.
DESCRIPTORS	Elementary Secondary Education; *Evaluation Methods; Higher Education; *Holistic Evaluation; *Program Evaluation; *Systems Development

ABSTRACT

This paper describes the implementation of the Holistic Systemic Evaluation (HSE), a component of an Education Systemic Initiative's strategic management. The HSE provides general guidance for the implementation and continual improvement of an Education Systemic Initiative Reform (ESIR). The implementation of the education system initiative plan: (1) identifies three leadership strategies to improve and guide education systemic initiative efforts; (2) outlines the education agenda for the subsequent years through improvement initiatives; (3) delineates the operating principles that are integral to the conduct of all the education initiative activities; (4) defines the evaluation frameworks for the ESIR, the bases from which education initiatives programs are organized, implemented, and evaluated; and (5) describes the roles and responsibilities of the various departmental entities that carry out the ESIR. (Contains 5 figures and 17 references.) (SLD)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 471 983

Running Head: Evaluation Framework

FRAMEWORK FOR EVALUATING EDUCATIONAL SYSTEMIC INITIATIVES

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

T.N. Ikegulu

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Address Correction:

Dr. T. Nelson Ikegulu, Research Associate
Department of Educational Leadership
College of Education
IYKESTAT@HOTMAIL.COM

P. O. Box 237
Grambling State University
Grambling, LA 71245-0237

November 5, 1999

TM034705

BEST COPY AVAILABLE

FRAMEWORK FOR EVALUATING EDUCATIONAL SYSTEMIC INITIATIVES

0.0 Abstract

The implementation of the Holistic Systemic Evaluation (HSE), a component of the Education Systemic Initiative's strategic management is presented in this paper. The HSE provides general guidance for the implementation and continual improvement of the Education Systemic Initiative Reform (ESIR). Hence, holistic systemic evaluation plan should primarily be directed to those officials who are charged with the functional responsibility of conceiving, directing, and implementing education activities within ESIR confines. Specifically, the implementation of the education systemic initiative plan:

- Identified three leadership strategies to improve and guide education systemic initiative efforts.
- Outlined the education agenda for the subsequent years through seven improvement initiatives.
- Delineated the operating principles that are integral to the conduct of all the education initiative activities.
- Defined the Evaluation Frameworks for the Education Systemic Initiative Reform; the bases from which education initiatives programs are organized, implemented, and evaluated.
- Described the roles and responsibilities of the various departmental entities that carry out the Education Systemic Initiative Reforms.

FRAMEWORK FOR EVALUATING EDUCATIONAL SYSTEMIC INITIATIVES

1.0 Introduction

The Education Systemic Initiative Project Director and/or Evaluator should understand the need and importance of an evaluation plan in education systemic initiative reform efforts. A linear evaluation process that incorporates the results of all subsystems and their components into eva;uation report phases where each phase reports on the results of the events and activities that happened during the reporting period is necessary. This method of reporting the progress of ESIR affords the management team the opportunity to strengthen and/or continue to focus upon the capacity building to achieve the overall project goals, streamline the results of the analyses, enforce policies that are deemed necessary during the evaluation reporting cycles, and improve upon the recommendations suggested in previous evaluation periods (Guskey, 1989, 1992; Heinich, Molenda, Russell, & Smaldino, 1996).

The Education Systemic Initiative Plan should adopt the systems approach principles for the evaluation of the Education Systemic Initiative Reform (ESIR) changes in science, mathematics, engineering, and technology (SMET) education at all levels (i.e., K-12 and beyond). An evaluation research with a '**Holistic Evaluation Design,**' has been chosen for this endeavor. Evaluation research is an applied research study that uses any of the several research methods designed to test the effectiveness or impacts of social changes or intervention (Guskey, 1988; Ikegulu & Barham, 2001; Mayers, 1999). The holistic evaluation design measures the degree of participation and shared responsibilities and/or ownership; moving away from compliance issues to accountability and utilization of allocated resources to maximize the convergence of available intellectual, faculty, personnel, and material resources. In a holistic sense, reform will occur when: (1) classroom teachers or instructors have the time, resources, permission, training, and space to experiment, try, fail, and/or achieve autonomy to sustain ownership; (2) students demonstrate the interest to learn and understand the classroom exercises to improve in their SMET education; and (3) parents, community, and/or business/university partners understand the need and importance of SMET education for minority and economically disadvantaged students in a growing population (Ikegulu, 1997, 1999a, 1999b). The Project/Program Evaluator and/or Director should also understand that uncertainties in socio-behavioral sciences and human populations. The evaluation philosophy should acknowledge that uncertainties in any component of the subsystem in both design and measurable attributes are evident and, as such, may and should not result in the failure of the super system (Guskey, 1992; Heinich, et al., 1996; Loucks, 1977; Mayers, 1999; Scriven, 1975, 1971, 1968). Hence, the tendency for the evaluation plan to be deterministic deters the pragmatic holistic systemic approach paradigm. Therefore, predictions, shrinkage (or short-cuts), and generalization are not possible during the initial phase without sound methodological approaches (including research design) and sophisticated analytical procedures (Ikegulu, 1999a, 1999b; Scriven, 19971, 1975). Instead, realistic approaches that are prevalent in any socio-behavioral setting should guide the feasibility of the systemic reform to effect changes in the SMET environments within the ESIR confines.

BEST COPY AVAILABLE

1.1 Education Systemic Initiative Reform Goals: The Super System

The Project/Program Evaluator and/or Director should be responsible for the planning, operation, implementation, and management of the ESIR project as described in the project's proposal and/or its modification(s) and amendment(s). The overall mission of the ESIR project should be to develop educational systemic change approaches to produce significant increases in the number of students in the educational system who are literate and proficient in engineering, mathematics, sciences, and technology (within the public schools system); be qualified to pursue undergraduate programs (within the higher education system); and be able to compete in the national and global economy in SMET related professions. In order to accomplish this mission, the ESIR management team, spearheaded by the District's Superintendent or the institution's President (as the Principal Investigator), the Co-Principal Investigators (the institutional Research Officer), the Project Director and/or Evaluator, and the SMET Supervisors (where applicable) should formulate the ESIR objectives. Collectively, these goals are the system's goals. Sample system's objectives include:

- To enact policies and practices that will increase PreK - 16 students' mathematics test scores on the appropriate standardized tests by at least 5% within each school and/or academic year.

- To increase the district's or institution's enrollment in Algebra, Biology, Physics, Chemistry, Computer Science, and/or Engineering Graphics by 50% by the end of the ESIR project.

- To double the number of students (directly involved in the ESIR Project) who will enroll in and successfully complete the SMET courses in Algebra, Biology, Chemistry I, Physics, Pre-Calculus, Calculus, Computer Science, Engineering Graphics, etc. by the end of the ESIR.

- To increase the number of students (directly involved in the Project) from the baseline year and, successfully complete the gate keeping course (with a grade of C or better) by 100% before the final year of the ESIR Project.

- To double the number of SMET high school graduate who are college-bound (and the number of SMET graduate-level student in the Project) by the year-end of the project.

- To establish and implement articulated standards-based SMET curricula throughout the district and/or the higher education community.

- To implement an articulated standards-based curricula, instructional, and assessment programs in PreK-16 and beyond in SMET education.

In response to the state and national demands and, with the support from the funding agency, the ESIR management team should place emphases on mathematics, science, and technology education towards the enhancement of teaching strategies to include the creation of stimulating and challenging learning environments; and to focus upon on-going assessment criteria and standards-based curricula implementation in all the ESIR classrooms. To achieve these objectives, the ESIR's management team should focus on the following systemic changes:

- a focus on high SMET expectations and a high level of competence of all students;
- a strengthening of professional competency of all faculty and staff;
- an integration of SMET into a standards-based curricula from PreK-16 and beyond;
- the development of quality assessment materials that are aligned with state, national, and professional frameworks and, are also standards-based, inquiry-dependent instructional models.

1.1.1 Components of the Subsystems: Synergy within the Super System

Figure 1-A is a schematic illustration of the interrelationships among the ESIR systems. This figure also portrays the logical flow of information within the super system and its components. The terminal objectives are embedded within the enabling objectives (ENAB_OBJ I to VI). Collectively, the ESIR objectives are the system's goals; the super system. The subsystems are the six enabling objectives and the micro subsystems are the terminal performance objectives with measurable attributes (See Figure 2).

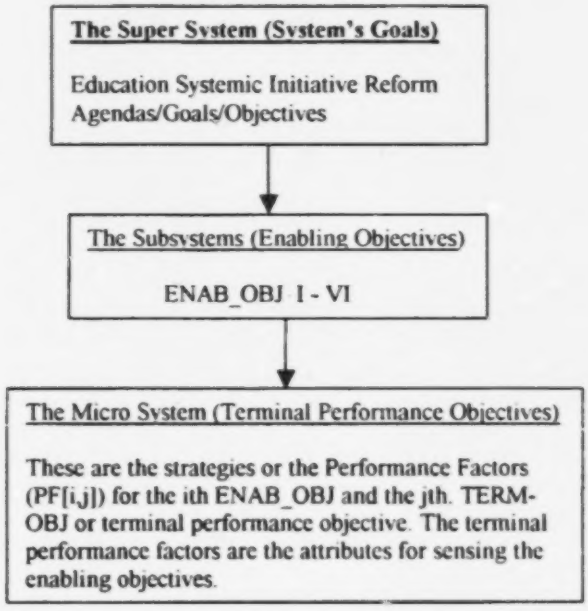

The Super System (System's Goals)
Education Systemic Initiative Reform Agendas/Goals/Objectives
The Subsystems (Enabling Objectives)
ENAB_OBJ I - VI
The Micro System (Terminal Performance Objectives)
These are the strategies or the Performance Factors (PF[i,j]) for the ith ENAB_OBJ and the jth. TERM-OBJ or terminal performance objective. The terminal performance factors are the attributes for sensing the enabling objectives.

Figure 1-A
A Linear Evaluation Process Using the Holistic Systemic Evaluation Paradigm

Figure 1-B is a cyclical illustration of the links between the subsystems and the super system, as well as among the super system, the subsystems, and the evaluation process. This figure also portrays the timeline for the completion of the activities within the each evaluation phase.

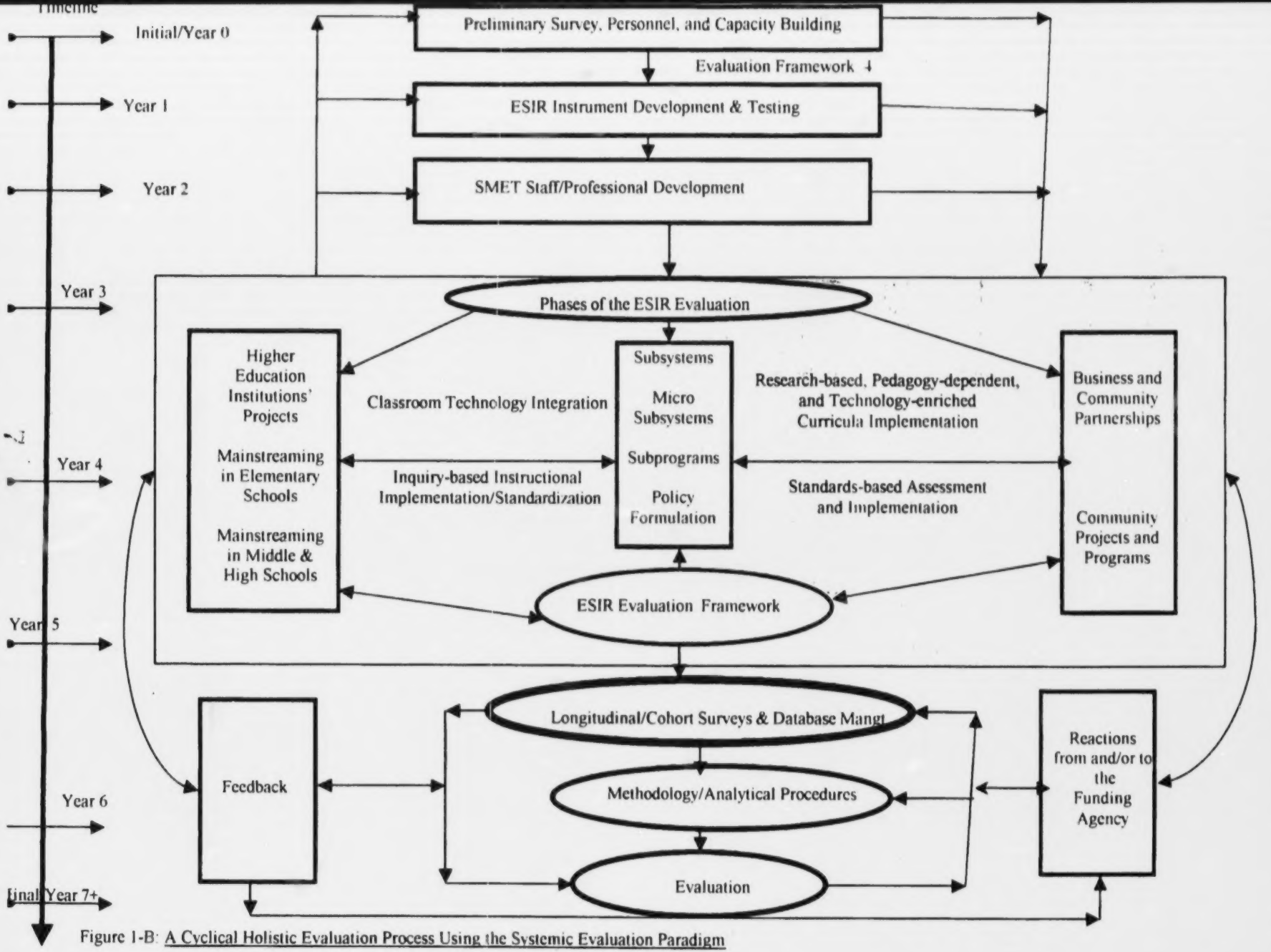


Figure 1-B: A Cyclical Holistic Evaluation Process Using the Systemic Evaluation Paradigm

2.0 Education Systemic Initiative Reform Agenda and Strategy

The Education Systemic Initiative Reform (ESIR) is broad and comprehensive. Seven specific reform improvement and implementation initiatives have been identified to guide the project and/or program(s), human and financial resources, and activities during the life span of the project (Initial to Final) school years. These initiatives guide the existing efforts as a school district or higher education institution and, serve as priority areas for capacity building, initiation of new activities, and establishment of sustainable infrastructures. It is a comprehensive list that will be carried out by the school district as a whole through the Project Director/Evaluator, the district's administrative staff, and the campus-based administrators. The seven reform improvement and implementation initiatives are:

1. Focus and Coordinate Campus-based Efforts.
2. Enhance Curriculum/Instructional and Assessment Products and Dissemination.
3. Improve Education Systemic Initiative Reform Integration and Coordination.
4. Facilitate Research within the School Districts and Higher Education Community.
5. Support Pre-service Education through Staff/Professional Development.
6. Coordinate Informal Education through Community and Adult Education Programs.
7. Implement ESIR's Comprehensive Data Collection and Evaluation System.

2.1 Focus and Coordinate Campus-based Efforts

The Education Systemic Initiative Reform is in one sense composed of all the campuses within the school district, as well as the SMET departments in higher education. The reform of mathematics, science, technology, and engineering in PreK–16 schools should be inextricably linked to the state and national higher education systems, as well as be aligned with the local, state, and national agendas for educational development. Central to the campus-based focus is the need for ESIR management to understand the campus education agendas and place emphases on coordinating its assets in a given campus toward meeting the ESIR related needs of that campus. By continuing existing and establishing new alliances, ESIR management should seek to connect the Principal Investigator, College Deans or Campus Principals, SMET supervisors or Department Heads, and business and other university partners and leadership to determine how these assets may best be utilized within the campus. Major actions to be taken include:

1. Campus principals and/or College Deans will establish relationships with the District's SMET supervisors and/or Department Heads to understand, develop, and coordinate ESIR's educational efforts in each campus and/or department.
2. Campus-based curriculum coordinators, Department Heads, program/grant managers or facilitators, and other ESIR education-funded directors/coordinators will establish direct linkages with the Principal investigator (through the Project Director and/or Evaluator) and contribute to the coordination and delivery of the ESIR's education reform agendas within a given campus/department.

3. The Principal Investigator (through the SMET Supervisors and Directors) will continue to develop linkages and support local, state, and/or national organizations that assist ESIR's Project Director and/or Evaluator in achieving the campus-based and/or departmental initiative. Such support organizations include the Clergy-in-Schools, Foundations, the NASA, the NSF, the National Alliance of State Science and Mathematics Coalitions, the Association of State Supervisors of Mathematics, the Council of State Science Supervisors, and other relevant education associations (e.g., NCTM, NCES, ITEA, etc.).

2.2 Enhance Curriculum/Instructional and Assessment Products and Dissemination

One of the ESIR's missions is to produce new data, images, and information that may be effectively included (and/or published) in professional journals, textbooks, curricula, and supplementary instructional products. Working with professional education associations, state/local and national education authorities, universities, private enterprise, and other organizations, we will collaborate to develop curriculum guides, instructional aids, and assessment products consistent with the national curriculum and assessment standards and/or state or local curriculum frameworks. These products will be developed in multiple formats with emphasis on innovative applications of educational technology and interactive strategies. Major actions to be taken include:

1. Develop and distribute a handbook outlining the ESIR's protocols for the development, review, field-testing, and distribution of instructional materials and assessment practices.

2. Develop a set of PreK–16 instructional products, in cooperation with the state and national curricula standards to support the district's and departmental locally established curricula in mathematics, science, technology, and engineering.

3. Develop a set of PreK–16 district-wide and institutional assessments that are in alignment with state and national frameworks.

4. Develop and distribute the ESIR's Evaluation Plan, including plans for Professional Development, Quality Control, and Data Collection, Disaggregation/Dissemination, and Utilization.

2.3 Improve Education Systemic Initiative Reform Integration and Coordination

The project's Education Systemic Initiative Reform consists of many parts, which, when working together as a whole, can make significant and positive contributions to the education community. The Implementation Plan should be designed to ensure that the research design, coordination, and implementation of ESIR's numerous educational projects, programs, and activities achieve this vision of a coherent and unified educational systemic initiative reforms to effect changes that will impact the overall image of the education community, as well as the quality of education of all students.

The educational function exemplifies a higher degree of integration and coordination that has ever been experienced in the 50-year history of any ESIR. However, work remains to improve the integration and coordination of these efforts. Improved program integration and coordination have to be accomplished at three distinct and interrelated levels: (1) Institution/District (2) Campus/Department and (3) Program/Project and the community. Major actions in this category include:

1. At the Institutional/District's Level: The Institutional President/Superintendent (as the Principal Investigator) provides the focus, policy, and general direction for Project's Education Systemic Initiative Reform. It is incumbent upon the ESIR's management team and the institutional/district's administrative staff, the Director of Research, Evaluation, and Planning, Director of Staff/Professional Development, Coordinator of Gifted/Talented and At-risk, Director of Communications, Director of Information Services and Technology, Director of Special/Developmental Education, SMET Supervisors, Department Heads, and the Project Director and/or Evaluator to formulate strategic education functions to provide the leadership and strategies for a single, unified Education Systemic Initiative Reform agendas.

2. At the Campus/Departmental Level: The campus-based and/or departmental administrators and education staff (College Deans, Department Heads, instructors, classroom teachers, librarians, counselors, etc.) should be responsible for implementing the overall project's Education Systemic Initiative Reform. It is incumbent upon the campus principals and their administrative staff to establish and maintain organizational mechanisms to provide District-wide integration and coordination of programs, projects, and activities. Additionally, the school principals, administrative staff, and curriculum coordinators or department heads must identify linkages among the campus programs, projects, and activities for the ESIR.

3. At the Program/Project Level: The directors, coordinators, and/or managers of individual programs/projects or subprograms/subprojects must identify linkages to other programs/projects and revise plans to ensure that these linkages are incorporated into and aligned with each of the campus-based and District's activities (departmental and institutional). These personnel must also ensure that the program/project or subprogram/subproject participants are made aware of related activities from which they may benefit.

2.4 Facilitate ESIR Research within the School district and Higher Education Community

Research relevant to the ESIR's three strategic improvements of the integration and coordination efforts is carried out primarily throughout the district and/or institution. However, the highly complex/complicated ones should be being conducted by the Project Evaluator. The Project Evaluator in conjunction with higher education community or universities will implement research projects that should be focused on higher education systemic initiative reforms. The goal is to streamline and focus these latter efforts so that they strongly support the district's research objectives as determined by the ESIR management team and approved by the Principal Investigator. Major actions in these areas include:

1. Merge similar programs/projects so that the best attributes of all are retained and enhanced.

2. Closely align research-related programs/projects to the district's, institutional, campus-based, and departmental evaluative research agendas. Specifically, realign the Project's overall goals to meet ESIR's research objectives and the campus-based research-related infrastructural priorities.

3. Collect, evaluate, and disseminate the most important research products (e.g., publications, awards, and technology transfer) so that the district/institutional and campus personnel recognize these efforts as relevant and important research contributions.

2.5 Support Pre-Service Education through Staff/Professional Development

Various national reports indicate that there will be a shortage of PreK–16 science, engineering, mathematics, and technology teachers over the next ten years. Concomitantly, institutions responsible for training the next generation of public school teachers are aligning their pre-service academic programs with new certification requirements and public policy expectations. While ESIR's existing in-service programs (in the form of district-wide and campus-based staff or professional development workshops, seminars, institutes, etc.) need to continue at their present level and pace, it is important for the ESIR management team to focus on new opportunities to support initiatives in the pre-service area. The ESIR Project's significant investments in research and development with institutions of higher education will provide a unique asset in identifying such opportunities. Major actions in this area should focus on:

1. Continue to refine and support district's Summer Institutes. Continue to offer stipends to attract qualified and certified mathematics teachers.

2. Continue to support the instructional faculty/staff through the tuition-reimbursement at the local and other institutions of higher education's pre-service activities that seek the collaboration of mathematics, science, engineering technology, and education departments in preparing the next generation of teachers.

3. Implement a two- to three-year inquiry-based and hands-on pre-service training in science and mathematics initiatives through the higher education community. The two- to three-year initiatives will model an approach that may be replicated in other regions or, serve as an ESIR's motif for content-specific pre-service training model.

4. Encourage ESIR-sponsored researchers at the district and universities to collaborate with pre-service education faculty to contribute to teacher preparation.

2.6 Coordinate Informal Education through Community and Adult Education: Informal Education Programs

Educational enrichment should be provided to the community through the Adult Education and Career Centers. Exploratorium, Planetarium, Museums, Science and Technology Centers, field trips, and similar nonprofit education organizations should be called upon to support the informal education community and provide significant educational activities for learners at all ages and levels of education. Most of these organizations are major community, regional, state, or national resources for science, mathematics, technology, and engineering technology education. In addition, the informal education community has a tradition of presenting educational experiences using pedagogic principles, inquiry-based, and hands-on approaches that are well aligned with the National Science Education Standards (NSEC) and the National Council of Teachers of Mathematics (NCTM) frameworks. The ESIR management team should work with and support these organizations. Major actions to be considered in this area include:

1. Define an ESIR mechanism for working with the informal science, mathematics, technology, and engineering technology education community.

2. Develop planetarium and galaxy programs and projects for local, state, and national distribution. Place students' exhibits on campus and local libraries, district's and/or institutional archives, and/or students' portfolios.

3. In collaboration with the district, develop and implement on-going campus-based programs to support the informal education community.

4. Continue to strengthen the ESIR and funding agency's education alliance.

5. Support Mathematics Clubs, National Science and Technology Week, NASA week, Space Day, Space Week, and National Engineers Week.

2.7 Implement ESIR's Comprehensive Data Collection and Evaluation System

In carrying out the equal education opportunity for all, the ESIR management team should strive to involve all students, community, and educators as both participants and partners in quality education. In conforming to the Federal Government Performance and Results Act of 1993, the ESIR Project should be committed to evaluating the performance of its programs/projects and activities in order to report to the stakeholders, the community at-large, and the funding agency and, to provide for continual improvement of such involvement of the educational community in its missions, research endeavors, development, and achievements. To that end, the ESIR's management team should develop a Database Management and Evaluation System (The DMES), an on-line and Internet-based system for data entry and collection from participants and program managers. The DMES is a data collection tool that includes raw data in SPSS and Excel formats; briefing and statistical presentation materials to be used for analysis and reporting; protocols for follow-up studies; and raw data to be analyzed for future documentation and presentation. Major actions include:

1. Continue systematic implementation of the evaluation phases.

2. Continue to improve upon the DMES capability to enhance its accuracy, current features, dependability, options, reliability, and robustness.

3. Strive toward a fully operational ESIR Database Management and Evaluation System that collects all ESIR Project's data.

4. Continue to increase the district's and/or institutional use of the DMES for educationally related and relevant activities and programs where feasible.

5. Increase techniques and processes for conducting follow-up studies.

6. Generate research topics, questions, and hypotheses germane to the field of systemic initiative reforms, evaluative studies, and education in general.

3.0 Evaluation Framework for the Education Systemic Initiative Reforms

The ESIR Evaluation framework (See Figure 2) is a model that was established to serve as a guide for the implementation and evaluation of all the Education Systemic Initiative Reform efforts. The framework was first proposed in June 1998. In September 1998, the proposed framework was presented to the ESIR management team. This meeting resulted in the overall acceptance of the framework and, the general consensus on its adoption and the establishment of the nodes that were aligned with the goals for each implementation approach. From that time until now, the framework has been refined and updated; reflecting directions defined in the Education Systemic Initiative Reform Agendas and Strategies.

The Evaluation framework for the Education Systemic Initiative Reform provides a pictorial representation of the project's systemic initiative reforms. It serves not only as a guidance tool, but also as an analytical mechanism, in conjunction with Figure 3, to evaluate the comprehensiveness of the ESIR's outreach to the education community. The framework depicts the integration of the three components of all systemic initiative reforms and agendas, programs, and activities. These three components are:

3.1 The Enabling Objectives: The ESIR Mission Statement

The fundamental component of any ESIR education activity is the content or knowledge derived from the funding agency's mission. There are six of these goals. At the institutional/District's level, the knowledge is the outcome of the ESIR mission as defined by the three functional and strategic integration and coordination of the systemic initiative reform efforts within the District/institution level(s), as well as at the campus/departmental and various programs and activities. The knowledge derived from the ESIR funding agency's objectives is the content, and thus, the foundation for all of the ESIR's education activities. The role of ESIR's systemic initiative reform is to add value by translating this content to meet the ESIR's clients' needs.

3.2 The Client

The ESIR's client is the formal and informal education community. For the purpose of the framework, the formal education community is divided into the following levels based on grade: (1) the public school system (PreK-12) broken down into (a) PreK–5 or the elementary school system, (b) 6–8 or the middle school system, and (c) 9–12 or the high school system; (2) Community and Adult Education (CAE) offered through the Adult Education and Career Centers in the form of vocational/technical education and on-going technology seminars, workshops, and/or institutes; and (3) Undergraduate and Graduate Education (UGE) or the college- bound public school graduates in SMET academic programs and careers.

At the PreK–12 levels, the content (or knowledge) derived from the ESIR mission is tailored to meet the clients' needs and is guided by curriculum standards and assessment practices for science, mathematics, technology, and engineering at the local, state, and national levels. At the postsecondary levels, the clients and the educational opportunities offered to them are directly involved in, and in support of ESIR's mission. The informal education community targets both the PreK–12 and postsecondary levels and, includes mathematics, science, and technology centers, museums, planetariums, and other nonprofit education organizations.

The education of the clients is both the beginning and the ending point for all the ESIR's education activities. It is the clients' education agenda that serves as the starting point in defining an educational project or activity. Furthermore, evaluation of the clients' success validates ESIR's education activities to determine whether the district(s) and the higher education institution(s) are contributing to its clients' educational excellence.

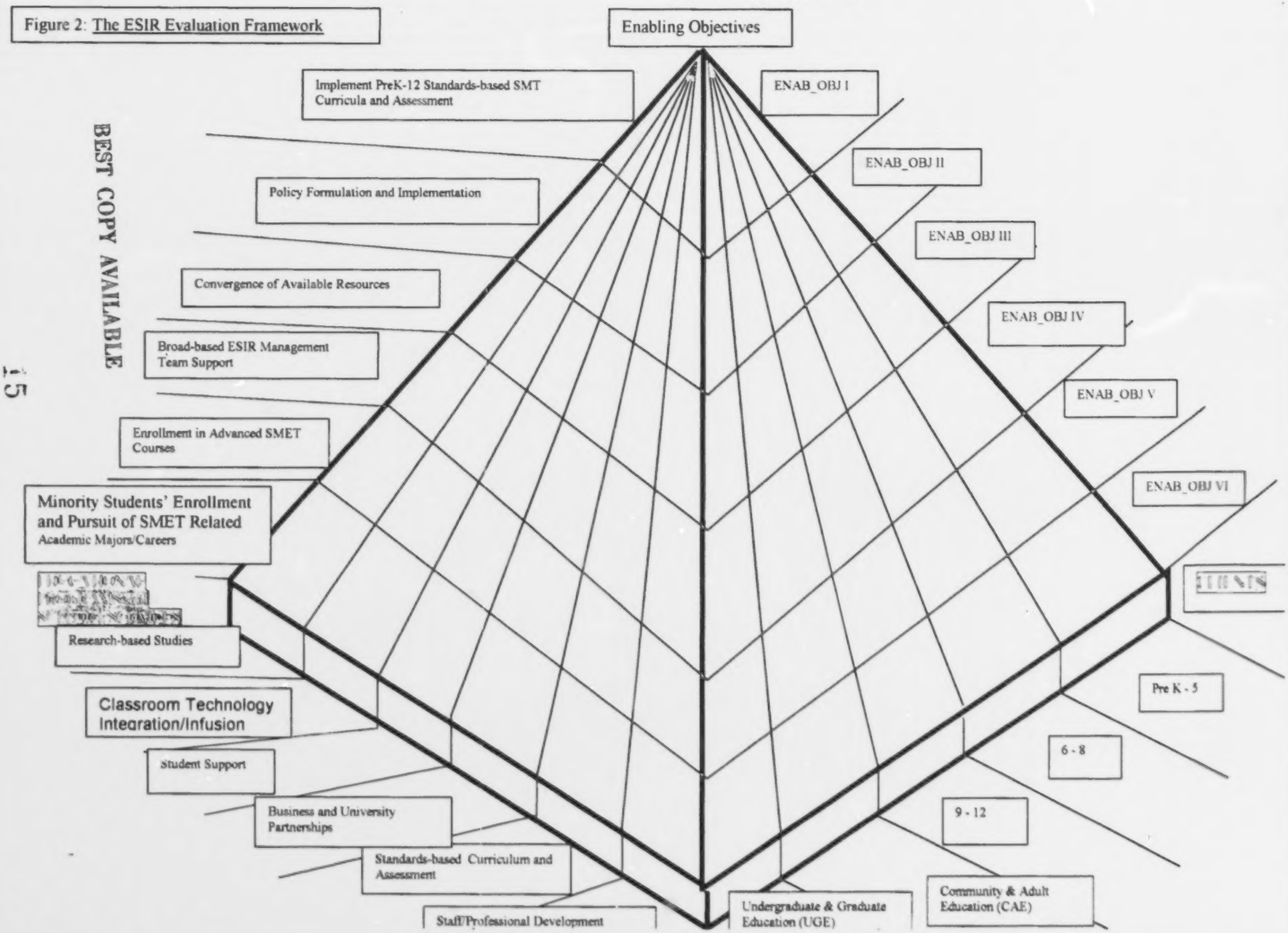
3.3 Educational Programs and Support Services

Six categories comprise the ESIR's systemic initiative reforms and define the way in which the ESIR's six Enabling Objectives (ENAB_OBJ) are delivered to the formal and informal education community. The following is a summary of these six programs and support services and activities, including the goals, objectives, and specific expectations or actions.

3.3.1 Staff/Professional Development

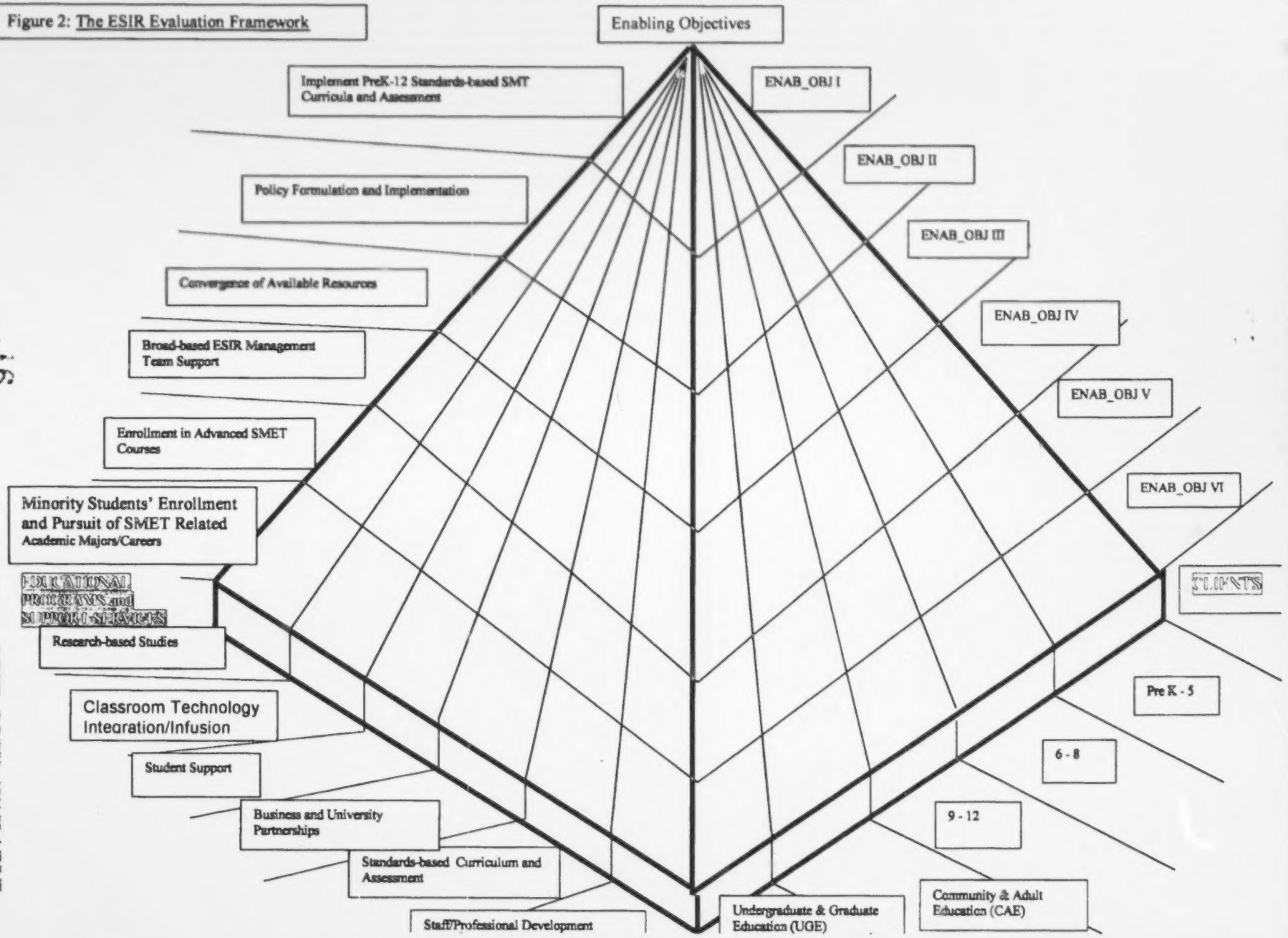
The primary objective here is to use the ESIR's mission, facilities, human resources, and programs to provide exposure and experiences to educators and faculty, to support the enhancement of knowledge and skills, and to provide access to ESIR information in science, mathematics, technology, engineering, and geography. The ESIR's management team uses its facilities, human resources, and programs to build its infrastructures and, involve educators and faculty to advance their knowledge and skills. These programs and support services and activities are designed to provide professional development experiences for PreK–16 instructional staff and educators, non-instructional staff, and/or higher education faculty that are involved in pre-service education. Additionally, some programs are designed to provide research opportunities. The educators and faculty (a) participate in ESIR projects, programs, and research and development activities, (b) apply methods for integrating these resources into their teaching, and (c) are informed about available ESIR resources. The targeted objectives include:

Figure 2: The ESIR Evaluation Framework



BEST COPY AVAILABLE

Figure 2: The ESIR Evaluation Framework



BEST COPY AVAILABLE

1 To provide ESIR's mission-based programs that will introduce the application of science, mathematics, engineering, and technology for use in student learning activities.

2. To provide educators with a wider range of alternatives using scientific inquiry based on the ESIR's missions and agendas.

3. To encourage a "multiplier" effect to expand the benefits of the in-service programs beyond participants to include additional educators. That is, to make good use of the Lead Teacher Program.

4. To provide access to and promote utilization of ESIR-related materials and information resources.

5. To increase the participation of underserved and under-utilized individuals and groups.

6. To facilitate collaborations between the faculty/staff of teacher preparation departments and the faculty/staff of scientific and technical departments to develop innovative approaches to teacher preparation.

We expect to accomplish the following activities:

1. Model inquiry-based science investigations and meaningful mathematics problem solving by engaging educators and teachers in the kinds of learning they are expected to practice with their students.

2. Expand follow-up and networking opportunities for the BISD family (teachers, parents, business/university partners, etc.) with enhancement programs through the use of electronic means, conferences, and training sessions.

3. Expand the scope of educator enhancement programs to include workshops at each. Define and execute activities that target pre-service systemic initiative reforms.

4. Provide education experiences for educators in the effective application of educational technologies (such as computers, telecommunications, videoconferencing, and CD-ROM) to present content and pedagogy.

3.3.2 Standards-based Curriculum and Assessment

The purpose here is to develop, utilize, and disseminate science, mathematics, and technology instructional materials based on ESIR's unique mission and results, and to support the development of higher education curricula and assessment. The ESIR develops, utilizes, and disseminates science, mathematics, and technology assessment, curriculum, and instructional materials based on ESIR's unique mission. Because education is primarily a state and local issue, we seek to broadly understand common curricula standards and topics, assessment practices and standards, collaborate with outside education experts, and work with the ESIR's content experts

to translate the enabling objectives and/or goals into supplementary instructional sequences and assessment packages. The following are some of the targeted objectives:

1. To support activities that facilitate an exchange of information among higher education curriculum developers and instructional designers.

2. To develop science, mathematics, and technology instructional materials that support curricula that are aligned with national standards and state frameworks and, are based on ESIR's unique mission and results.

3. To review and revise existing ESIR's instructional materials to align with the national standards and state frameworks and update content based on ESIR's unique mission and results.

4. To facilitate the use of the ESIR's instructional materials through educator and in-service training programs.

5. To disseminate the ESIR's instructional materials to educators by fully utilizing Project's distribution system for educators at the campus and/or departmental levels.

The following expectations are in order:

1. Expand the use of the ESIR's curriculum support products in educator and in-service training programs.

2. Improve the development process for educational products by creating and disseminating a handbook to provide guidance to individuals and organizations developing the ESIR's curriculum support products.

3. Replace outdated ESIR's educational products with new versions that support the national education standards and state frameworks and, that contain the most accurate and current contents derived from the ESIR's goals.

4. Improve communications among the district's/institutional Information Services and Technology (IST), campus/departmental administrators, SMET supervisors, and campus-based curriculum coordinators. Provide quality training on ESIR's content and increase the use of ESIR's assessment, curriculum, and instructional products.

5. Through the Project's systemic initiatives, ensure that campus-based IST's become part of the systemic initiatives on each campus and review the campus-based IST's mission to ensure their alignment with the overall ESIR's holistic educational objectives.

6. Where appropriate and feasible, ensure that all assessment, curriculum, and instructional support products are available electronically.

3.3.3 Business and University Partners

The main focus here is to use the ESIR's unique assets to support local, regional, state, and national science, mathematics, technology, and engineering education systemic reform change efforts through collaboration with internal and external stakeholders. As the United States continues to reform science, mathematics, technology, and engineering instruction in its PreK–16 and beyond schools, the ESIR management team has placed emphases on coordinating all of the ESIR's assets in a given campus toward assisting in meeting its goals for improvement of the school's system of education. By establishing a variety of partnerships, the ESIR's management team seeks to convene the Principal Investigator, SMET supervisors, campus principals, lead teachers, and commercial contractors with the local and state education leadership to determine how these assets may best be utilized. The targeted objectives in this area include:

1. To coordinate planning among the ESIR education initiatives to ensure alignment with and support of standards-led systemic improvement initiatives of the states.

2. To redirect existing systemic initiative reforms, and to ensure that new initiatives address local and state needs together with their unique education and economic development efforts.

3. To support standards-based science, mathematics, technology, and engineering education change by aligning ESIR Project's educational programs and products with the national/state standards.

4. To expand interactions with external stakeholders in the systemic improvement of education change.

The following accomplishments are expected:

1. Provide professional development and support on standards-based education initiatives to all the ESIR's internal education community.

2. Review all the existing ESIR's education initiatives to ensure their alignment with the national vision and philosophy for standards-based systemic reform.

3. Design new programs or redesign existing programs to ensure that all the ESIR's efforts align with the science, mathematics, technology, and engineering education standards and support the needs of those engaged in the implementation of standards-based science, mathematics, technology, and engineering education at the state and local levels.

4. Leverage the use of the ESIR's programs and resources by expanding ESIR management team's interactions and cooperation with all stakeholders involved in national and state systemic initiatives.

5. Through the campuses and departments, develop and implement a plan that supports the needs of individual school and/or Project site.

3.3.4 Student Support

The goal here is to utilize the ESIR's mission, facilities, human resources, and programs to provide information, experiences, and research opportunities for students at all levels to support the enhancement of knowledge and skills in the areas of science, mathematics, and technology. Student support programs are intended to involve students in the intrinsically interesting and informative BISD-CPMSA and NSF common goals. The objectives in this area are:

1. To provide experiences and information that are designed to promote students' interest in SMET.

2. To provide exposure to research and/or research experiences and activities to promote SMET academic and career awareness.

3. To provide support to the science and technology workforce pipeline by including greater participation of individuals who are under-represented in SMET.

4. To increase the number of student support opportunities through partnerships and small business cooperation and collaboration.

We expect to accomplish the following:

1. Develop and maintain electronically disseminated communication of all the ESIR-sponsored student opportunities and career information.

2. Coordinate ESIR's student program efforts and ensure the progression of student programs.

3. Develop and field-test models for involvement strategies in all student programs.

3.3.5 Classroom Technology Integration

The primary goal here is to research and develop products and services that facilitate the application of technology to enhance the educational process for formal and informal education and lifelong learning. The ESIR's educational technology program should support at least two of the four components of the National Educational Technology Initiative. The ESIR Project should address the development of innovative learning tools and strategies (that are usable in the classrooms), as well as teacher training opportunities for the information providers (Guskey, 1988, 1989, 1992; Loucks, 1977). The objectives in this instance are:

1. To produce technology-based teaching tools and strategies that are grounded in or derived from the ESIR's mission.

2. To use emerging technologies for, and apply existing technologies to, public and higher education programs and curricula.

3. To utilize technology to facilitate communication within the educational community.

4. To involve educators, staff, students, and the community at-large in the ESIR's missions through innovative uses of technologies.

5. To conduct empirical studies in new teaching and learning practices that is made possible through the ESIR's mission-derived technology.

The expectations in this category are as follows:

1. Provide technology training and support for the persons involved in the operation of the Information Services and Technology network and other programs as necessary.

2. Implement a coordinated electronic dissemination system that ensures that all ESIR Project's education activities and products are available through appropriate networking technologies (that is, the Internet and satellite or cable television).

3. Demonstrate ESIR's educational technology resources at professional development conferences and other relevant venues.

4. Develop innovative learning tools and technologies that are integrated with curriculum support and teacher enhancement activities.

5. Develop, implement, and evaluate distance education and virtual mentoring projects.

3.3.6 Research-based Studies

The goal in this area is to involve the education community, particularly higher education, in the ESIR's programs that contribute to the development of new knowledge in support of its missions, and to utilize the talent and resources of the higher education community. Research and development activities occur primarily, though not exclusively, at the graduate level and involve students (undergraduate and graduate) and faculty who make substantive contributions to ESIR's mission. In addition to directly supporting the Project's academic programs, these activities promote the development of new collaborations with the academic community; significantly enrich pre-service and graduate education, as well as research opportunities (Ikegulu, 1997, 1999a, 199b, 2001; Ikegulu & Barham, 2001; Loucks, 1977; Mayers, 1999; Ogunyemi & Ikegulu, 1998; Scriven, 1975). The other goals are:

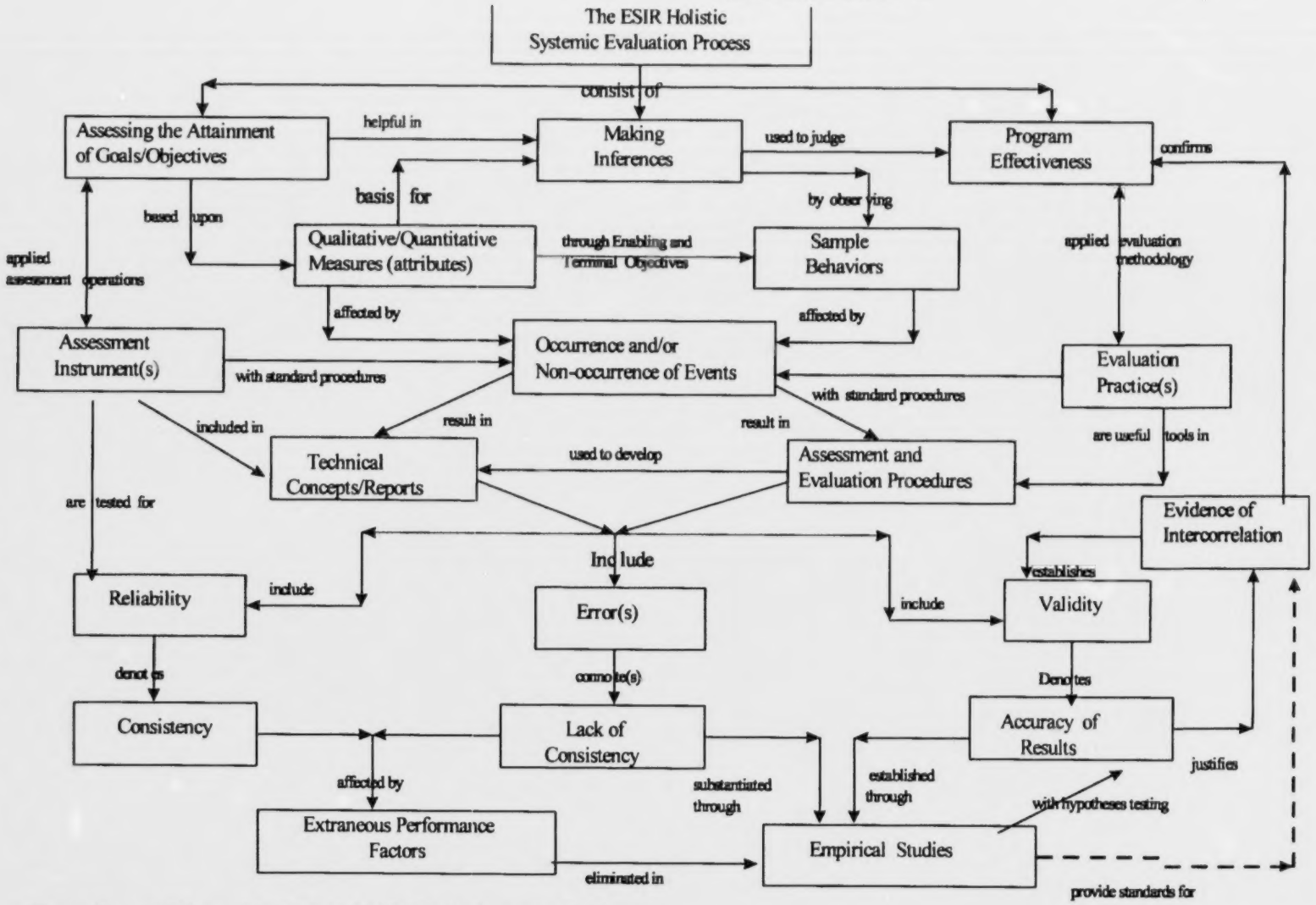
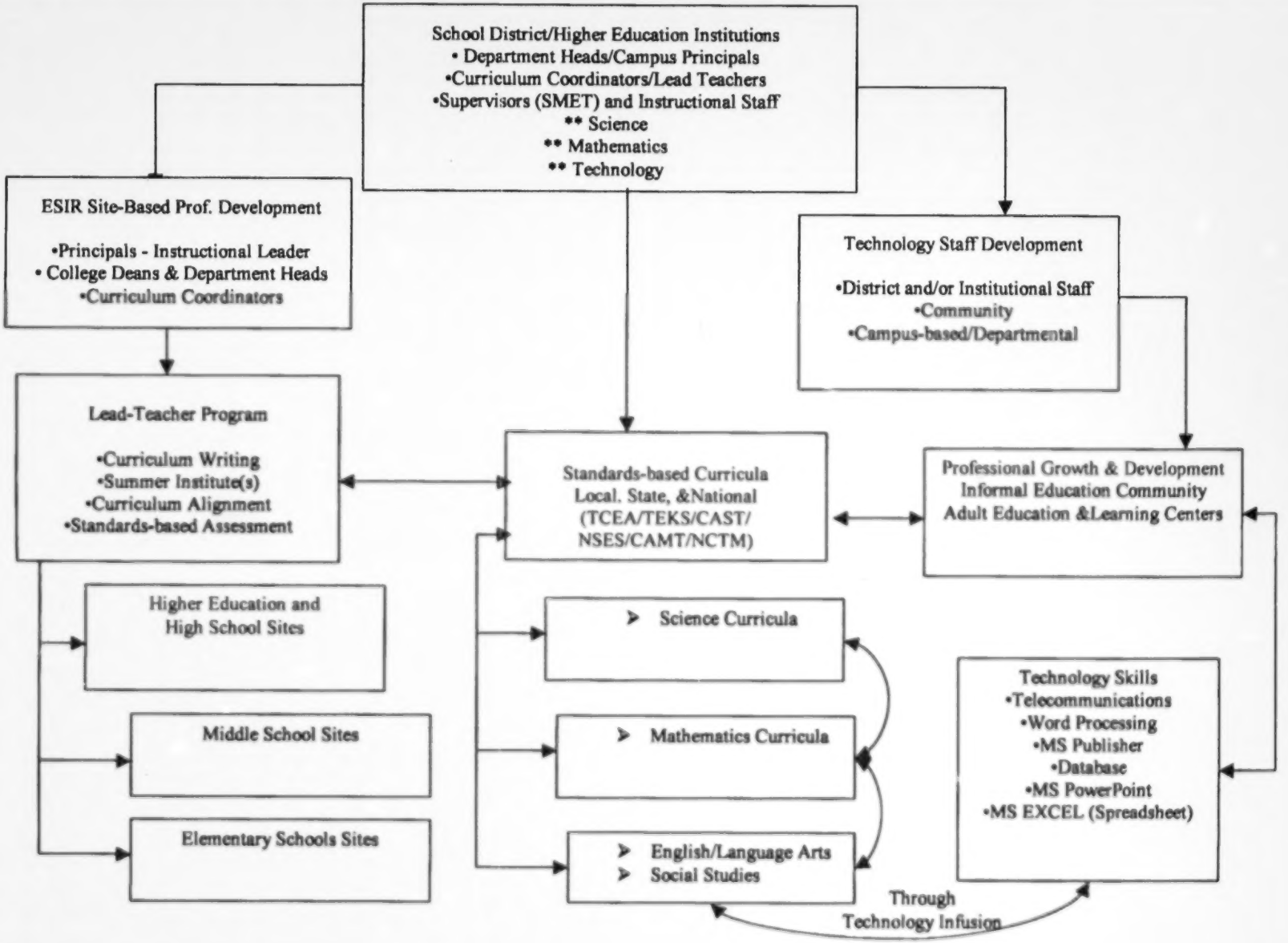


Figure 3: **A Hierarchical Model of Holistic Systemic Evaluation**

Figure 4: The ESIR Staff/Professional Development Model



1. To provide administrative infrastructure to support ESIR-sponsored programs for the academic research community.

2. To communicate opportunities for the ESIR-sponsored research and changes in ESIR Project's research policy to the academic community.

3. To act as a liaison between the higher education community and the district.

5. To establish and maintain communication among the district's staff, the ESIR's management tem, the ESIR-sponsored university programs, and the campus-based staff, faculty, students, and teachers.

5. To promote sponsorships among the business and industrial community with ESIR's management team and the ESIR-sponsored research programs.

6. To encourage the transfer of ESIR-funded technology development to the commercial sector and to the American taxpayer.

Major expectations include:

1. Develop, in consultation with relevant stakeholders, an implementation plan for all the ESIR's research programs sponsored by the funding agency.

2. Produce and maintain an electronically disseminated communication system of the ESIR-sponsored research opportunities, which provides a single point of information for individuals and organizations seeking to participate in systemic initiative research activities.

3. Track, evaluate, and disseminate the results of research programs sponsored by the funding agency through the ESIR's 'Holistic Education Evaluation System.

4. Increase the visibility of university programs, particularly within the ESIR confines, and the unique role these programs play in facilitating collaborations with the academic community.

3.4 The Holistic Systemic Evaluation: Analytical Framework

The framework for the ESIR evaluation plan is as shown in Figure 2. The analytical framework for the evaluation studies in ESIR is as depicted in Figure 3. A major challenge to full-scale evaluation of any systemic initiative reform project has been the ability to articulate and integrate the subsystems into a coherent functional unit for the betterment of the overall student and faculty/staff population in the district and institution, the community, and the project sponsor(s). The evaluation plan adopted for the educational Project's systemic initiative reform changes in SMET is a 'Holistic Evaluation Design.' This is a global systems approach paradigm that evaluates the micro subsystems first, uses the results from these micro subsystems to assess the effectiveness of the subsystem, and the evaluation results from the subsystems to judge the

ESIR's management team should endeavor to use its facilities, human resources, and programs to maximize its capacity building, build and sustain its established infrastructures, and involve educators and faculty/staff to advance their knowledge and skills. These programs and support services and activities should be designed to provide professional development experiences for PreK–16 instructional staff and educators, non-instructional staff, and/or higher education faculty who are involved in- and pre-service teacher education programs. Additionally, some programs should be designed to provide research opportunities that will enhance the overall image of the ESIR Project within the community, campuses, departments, and/or Project sites. The educators and faculty (a) participate in ESIR Projects, programs, and research and development activities, (b) apply methods for integrating these resources into their teaching, and (c) are informed about available ESIR resources.

4.0 Conclusion

The Holistic Systemic Evaluation, one component of the ESIR's strategic management system, provides general guidance for the implementation and continual improvement of the Education Systemic Initiative Reform throughout the life of the Project. Hence, the ESIR Evaluation Plan should primarily be directed to those officials who are charged with the functional responsibility of conceiving, directing, and implementing education activities within the Project's site(s). Specifically, the implementation plan:

- Proposes a holistic systemic evaluation paradigm.
- Identifies three leadership strategies to improve and guide our efforts.
- Formulates an evaluation framework that links the six enabling objectives to the clients and the educational programs and support services.
- Proposes an analytical evaluation framework that will guide the conduct, data collection, and analytical procedures throughout the tenure of the project.
- Outlines the ESIR's education agendas through seven improvement initiatives.
- Delineates the operating principles integral to the conduct of all the ESIR's education activities.
- Defines the Evaluation Framework for the Education Systemic Initiative Reform, the basis from which the district-wide and institutional, campus-based and departments, and programs are organized, implemented, and evaluated.
- Describes the roles and responsibilities of the various departmental entities that carry out the Education Systemic Initiative Reform activities.

5.0 REFERENCE

Guskey, T. R. (1992). What does it mean to be "research-based?" The Developer, p. 5.

Guskey, T. R. (1989). Attitude and perceptual change in teachers. International Journal of Educational Research, 13(4), 439-453.

Guskey, T. R. (1988). Teacher efficacy, self-concept, and attitudes toward the implementation of instructional innovation. Teaching and Teacher Education, 4(1), 63-69.

Heinich, R., Molenda, M., Russell, J. D., & Smaldino, S. E. (1996). Instructional media and technologies for learning (5th ed.). Englewood Cliffs, NJ: Prentice-Hall.

Ikegulu, T. N. (1999b). Globalization and Co-integration of Universal Education. ERIC Clearinghouse and Journal of Resources in Education (ERIC Reproduction Service No. ED 451 823).

Ikegulu, T. N. (1999a). Multicultural and Globalized Education: International Students' Perspective. ERIC Clearinghouse and Journal of Resources in Education (ERIC Reproduction Service No. ED 442 417).

Ikegulu, T. N. (1997). Effectiveness of Mediated Instructional Strategies and Learning Styles in Muticulturally Linguistic Environments: Implications for Developmental Educators. ERIC Clearinghouse and Journal of Resources in Education (ERIC Document Reproduction Service No. ED 409 757).

Ikegulu, T. N. (1997). Effects of Institutional Experience and Family Support on Post-Developmental Students' Academic Performance. ERIC Clearinghouse and Journal of Resources in Education (ERIC Document Reproduction Service No. ED 430 042).

Ikegulu, T. N. & Barham W. A. (2001). Gender Roles, Final Course Grades, and Faculty Evaluation. Journal of Research and Teaching in Developmental Education, 17(2), 53-65.

Ikegulu, T. N. & Barham, W. A. (1997a). Students' Intentional Persistence As A Web Of Causal Factors: A Preliminary Study II. ERIC Clearinghouse and Journal of Resources in Education (ERIC Document Reproduction Service No. ED 428 643).

Ikegulu, T. N. & Barham, W. A. (1997b). Students' Intentional Persistence As A Web Of Causal Factors: A Preliminary Study I. ERIC Clearinghouse and Journal of Resources in Education (ERIC Document Reproduction Service No. ED 428 642).

Loucks, S. F. (1977). Levels of use of the innovation: The conceptualization and measurement of a variable useful for assessing innovation implementation by individuals. (ERIC Document Reproduction Service No. ED 137 947).

Mayers, D. P. (1999). Measuring instructional practice: Can policymakers trust survey data? Educational Evaluation and Policy Analysis, 21(1), 29-45.

Ogunyemi, A. O. & Ikegulu, T. N. (1998). The differential effects of students' gender and expected course grades on faculty evaluation. Louisiana Educational Research Journal, 13(2), 23-50.

Scriven, M. (1975). Causation as explanation. NOUS, 9, 3-16.

Scriven, M. (1971). The logic of cause. Theory of Decision, 2, 49-66.

Scriven, M. (1968). In defense of all causes. Issues in Criminology, 79-81.

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

TM034705

REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title:
FRAMEWORK FOR EVALUATING EDUCATIONAL SYSTEMIC INITIATIVES

Author(s): Dr. T. Nelson Ikegulu, Research Associate

Corporate Source: College of Education Depart of EducAtional Leadership
Grambling State University

Publication Date: November 5 1999

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

Level 1

XX

Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) *and* paper copy.

The sample sticker shown below will be affixed to all Level 2A documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2A

Level 2A

☐

Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only

The sample sticker shown below will be affixed to all Level 2B documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2B

Level 2B

☐

Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Sign here, → please

Signature: Nelson T. Ikegulu	Printed Name/Position/Title: Dr. T. N. Ikegulu, Research Associate
Organization/Address: P.O. Box 237 Grambling, LA 71245-0237	Telephone: (318) 274-2549 FAX:
	E-Mail Address: tykestar@hotmail.com Date: 11/5/99

(over)

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, *or*, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

ERIC Processing and Reference Facility
4483-A Forbes Boulevard
Lanham, Maryland 20706

Telephone: 301-552-4200
Toll Free: 800-799-3742
FAX: 301-552-4700
e-mail: info@ericfac.piccard.csc.com
WWW: http://ericfacility.org

EFF-088 (Rev. 9/97)
PREVIOUS VERSIONS OF THIS FORM ARE OBSOLETE.